IN THE CLAIMS

1. (Currently Amended) A position sensor according to the transit time principle of a mechanical-elastic wave ~~with~~, said sensor comprising:

a waveguide ~~(3)~~ made of electrically conductive material;

a detector coil ~~(5)~~ in a detector range being arranged coaxially on the waveguide ~~(3),~~;

~~a position element, i.e.~~ a position magnet ~~(28), which can be moved~~ moveable along the waveguide ~~(3)~~; and

a flux guide unit being assigned to said detector coil.

~~characterized in that~~

~~the waveguide (3) is made of electrically conductive material,~~

~~the detector coil (5) in the detector range is arranged coaxially on the waveguide (3) and~~

~~the detector coil (5) is assigned to a flux guide unit (30).~~

2. (Currently Amended) The ~~P~~position sensor under Claim 1 ~~characterized in that the~~ wherein said waveguide ~~(3)~~ possesses a solid cross-section.

3. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the cross-section of the waveguide (3) in particular is solid throughout the~~ according to claim 1 wherein said waveguide has a solid cross section through an entire waveguide measurement range.

4. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 1 wherein said detector ~~(5)~~ coil is also a part of a detector arrangement just like a detector circuit.

5. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that~~ according to claim 1 wherein said flux guide unit ~~(30)~~ of the detector coil ~~(5)~~ is assigned so that it simultaneously shields the detector coil ~~(5)~~ against undesired external magnetic fields.

6. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 1 wherein a magnetic flux path of the magnetic flux enabled by the flux guide unit ~~(30)~~ encloses the windings of the coil at least once ~~in particular~~ including the waveguide ~~(3)~~ in the flux path.

7. The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 1 wherein said magnetic flux path enabled by the flux guide unit ~~(30)~~ surrounds the entire detector coil ~~in particular at least one axial layer in particular surrounding the said detector coil completely~~.

8. (Currently Amended) A ~~P~~position sensor according to the transit time principle of a mechanical-elastic wave ~~with~~, said sensor comprising:

a waveguide ~~(3)~~;

a detector coil ~~(5)~~ arranged on the waveguide;

~~a position element, i.e.~~ a position magnet ~~(28), which can be moved~~ movable along the waveguide ~~(3)~~;

an electrical return ~~(6) in particular under one of the preceding claims, characterized in that~~ at least in the axial range of the detector coil ~~(5)~~ of the return ~~(6)~~ is coaxially arranged externally around the detector coil ~~(5)~~.

9. (Currently Amended) The ~~P~~position sensor under Claim 8 ~~characterized in that the~~ wherein said electrical return ~~(6)~~ consists of electrically conductive and also magnetic shielding material with a permeability of $\mu>1$.

10. (Currently Amended) The ~~P~~position sensor under Claim 9~~, characterized in that The~~ wherein said electrical return ~~(6)~~ exhibits a ~~an extensively as possible, in particular~~ completely enclosed cross-section.

11. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the shielding, in particular the~~ according to claim 8 wherein a flux guide unit (30) encloses the detector coil (5) ~~at least partially, in particular along the layer, in particular an axial layer of the detector coil (5), in particular coaxially encloses~~..

12. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that~~ according to claim 8 wherein said detector coil ~~(5)~~ is constructed as a self-supporting coil ~~without coil shell~~.

13. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 8 wherein said detector coil ~~(5)~~ is wrapped on a coil shell~~, in particular a H-shaped coil shell~~ in a longitudinal view.

14. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the shielding, in particular the~~ according to claim 8 wherein a flux guide unit ~~(30)~~ having an opening for said waveguide and an opening for electrical conductors connected to said detector completely encloses said detector coil (5) ~~except for the opening (5a) for the waveguide (3) as well as at lest on guide opening (5b) for the electrical conductors connected to the detector coil (5)~~.

15. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 11 wherein said flux guide unit ~~(30c)~~ is primarily cylindrically shell-shaped ~~in particular cylindrically shaped~~ with two ~~openings~~ opposing openings in the enclosed front side ~~(5a, 5a')~~ for entry and exit of ~~the~~ said waveguide ~~(3)~~ and a conductor opening ~~(5b)~~ for the passage of the electrical conductor for the detector coil ~~(5)~~, in which the conductor opening ~~(5b)~~ ~~in particular~~ is found in the cylindrical surface area of the flux guide unit ~~(30)~~ .

16. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 15 wherein said cylindrical flux guide unit ~~(30)~~ consists of a cup-shaped body with an open front side and a suitable cover on the ~~this~~ frontal opening.

17. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that~~ according to claim 15 wherein the cylindrical housing consists of two half-cylindrical shells.

18. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 14 wherein said flux guide ~~component~~ unit consists of a ferromagnetic material with a permeability of $\mu > 10$~~, in particular $\mu > 1{,}000$, in particular $\mu > 10{,}000$~~.

19. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 14 wherein said flux guide unit ~~(30)~~ consists of a highly permeable allo, ~~in particular~~ out of ferrite.

20. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that~~ according to claim 8 wherein a direct current is flowed through said ~~the~~ waveguide ~~(3)~~.

21. (Canceled)

22. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 8 wherein an axial direction of ~~the~~ said detector coil ~~(5)~~ corresponds with a longitudinal direction of said ~~the~~ waveguide ~~(3)~~.

23. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 8 wherein said detector coil ~~(5)~~ is a toroid coil.

24. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that~~ according to claim 23 wherein axial length of the toroid coil that at least corresponds to a ~~the~~ diameter of its free central opening ~~(5a)~~, is preferably at least twice as large.

25. (Currently Amended) The ~~P~~position sensor ~~under one of the preceding claims, characterized in that the~~ according to claim 23 wherein said toroid coil is enclosed by said flux guide unit ~~(30)~~ which has a somewhat cylindrical form and consists of two half-shells, which are enclosed by a front side in each case, except for a central passage opening ~~(5a)~~, analogous to the passage opening of the toroid coil and its contact layer runs diagonally to the longitudinal axis of the toroid coil and the flux guide unit ~~(30)~~.

26. (New) The position sensor according to claim 1 wherein said magnetic flux path enabled by the flux guide unit surrounds the detector coil in at least one axial layer surrounding said detector coil.

27. (New) The position sensor according to claim 8 wherein a flux guide unit encloses the detector coil along an axial layer of the detector coil.

28. (New) The position sensor according to claim 8 wherein a flux guide unit coaxially encloses the detector coil along an axial layer of the detector coil.

29. (New) The position sensor according to claim 14 wherein said flux guide unit is formed of a ferromagnetic material with a permeability of $\mu > 1{,}000$

30. (New) The position sensor according to claim 14 wherein said flux guide unit is formed of a ferromagnetic material with a permeability of $\mu > 10{,}000$.